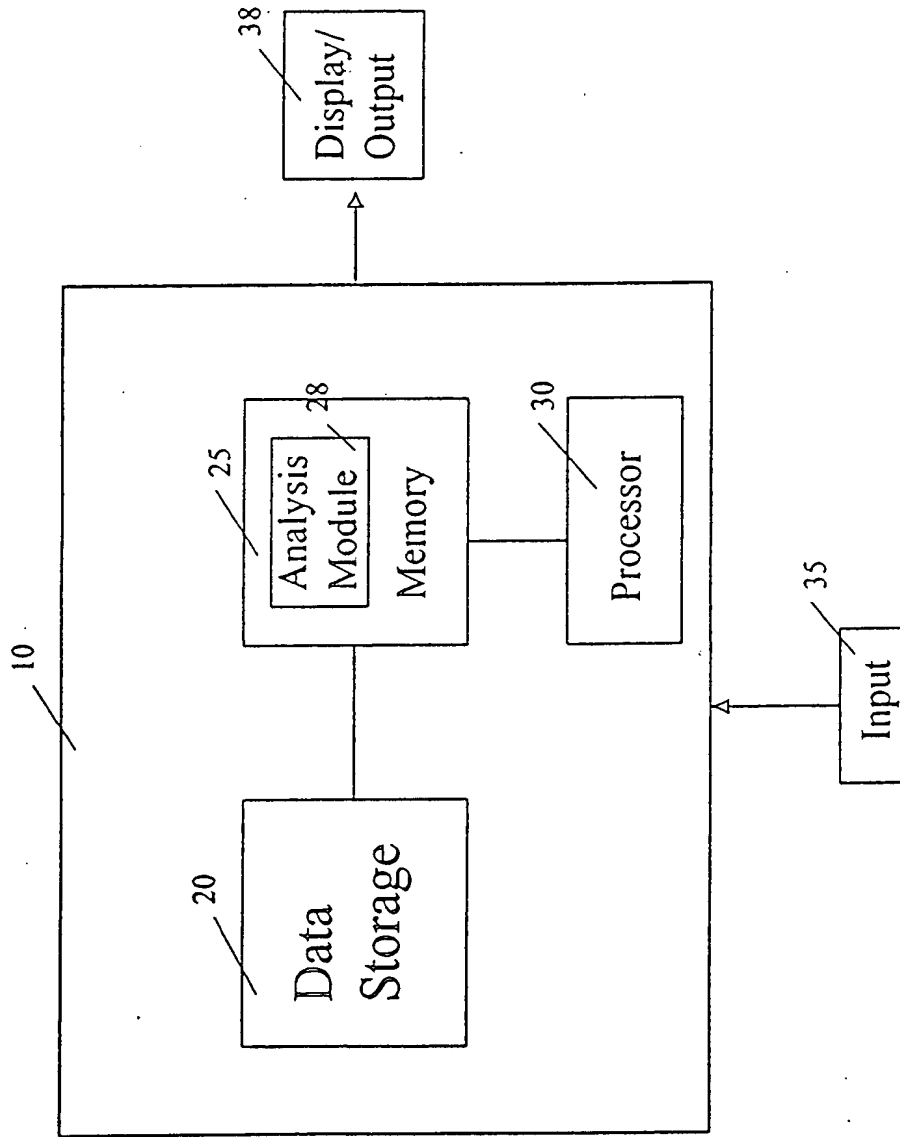


Figure 1

Figure 2



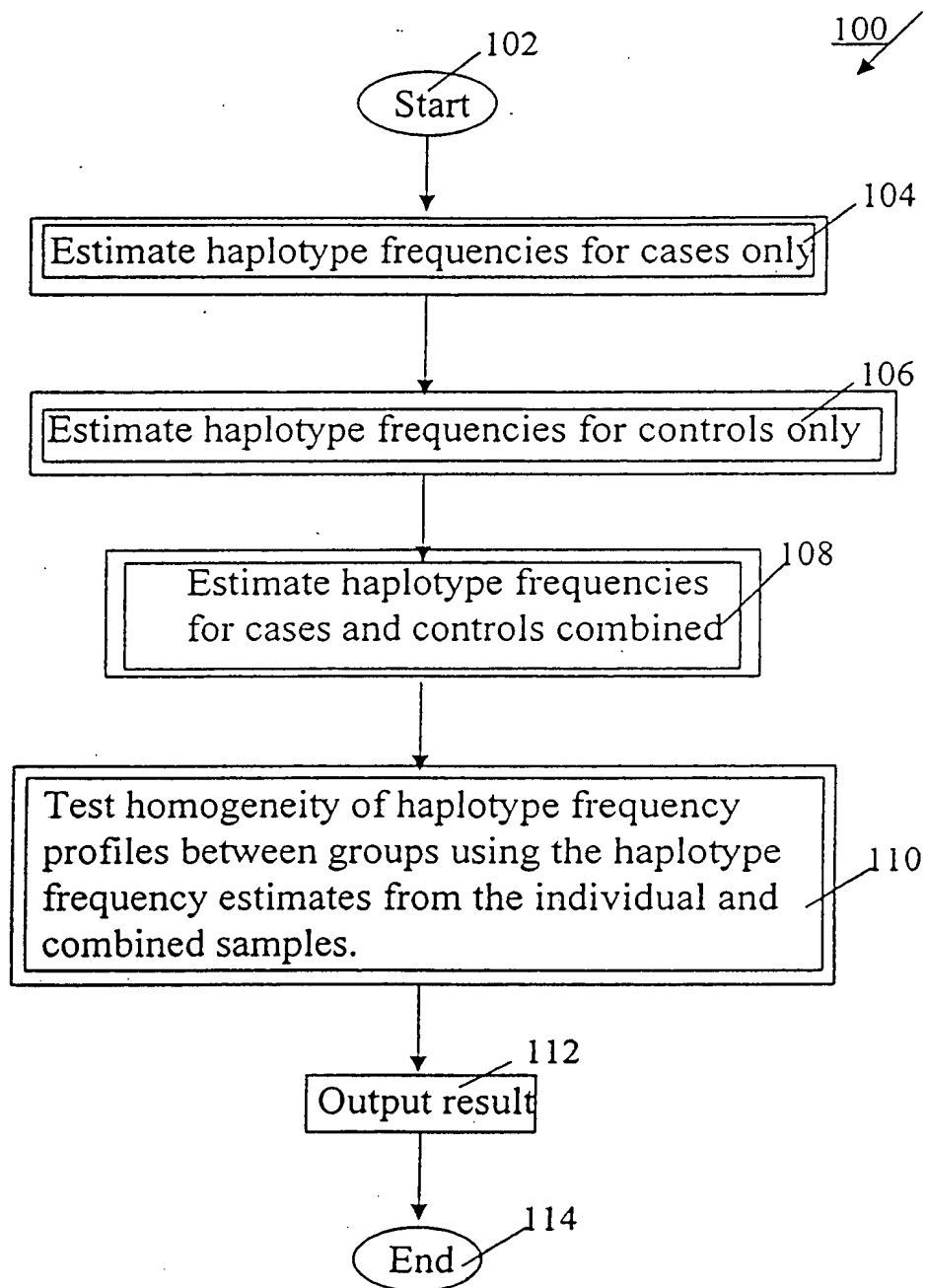


Figure 3

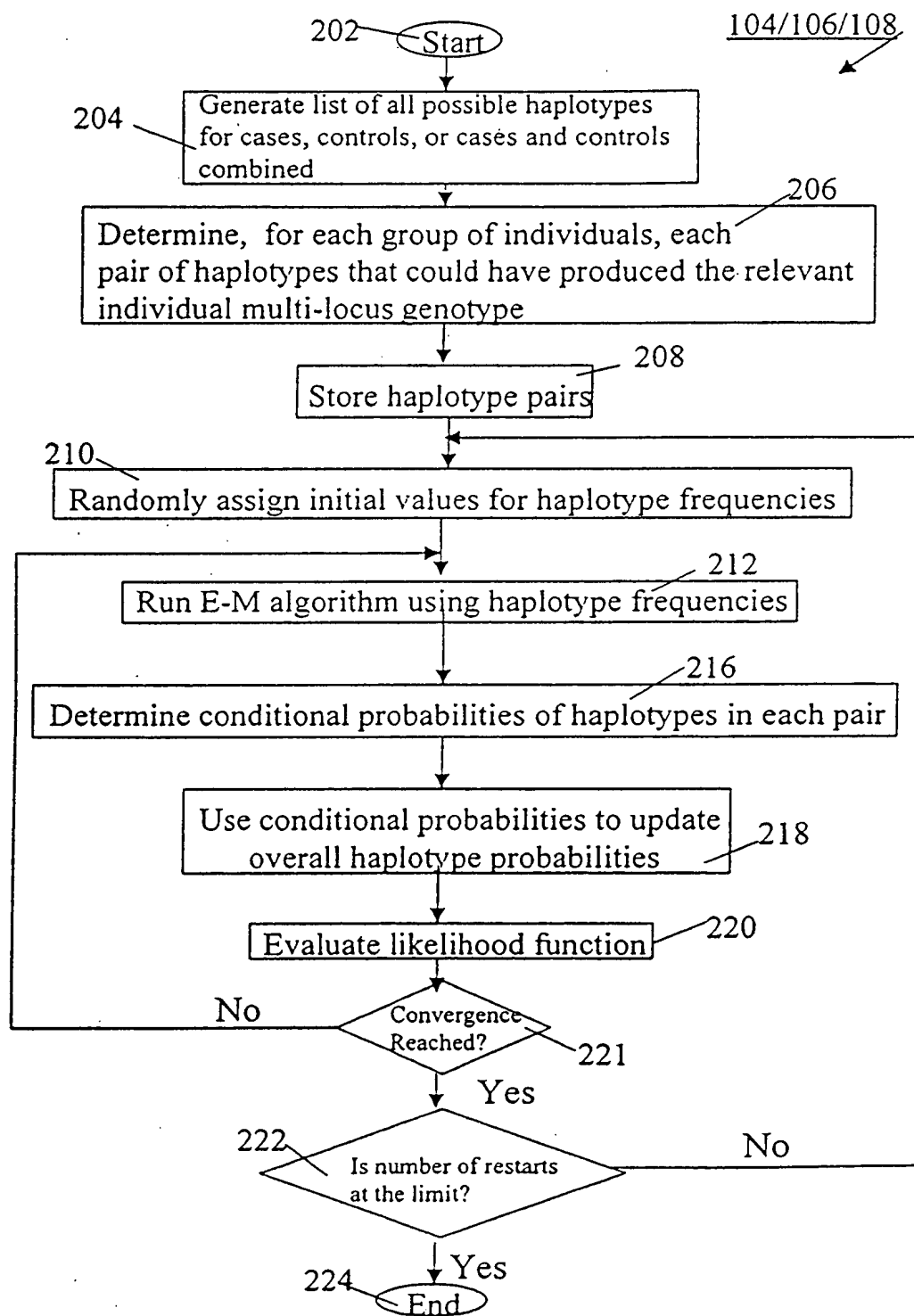


Figure 4

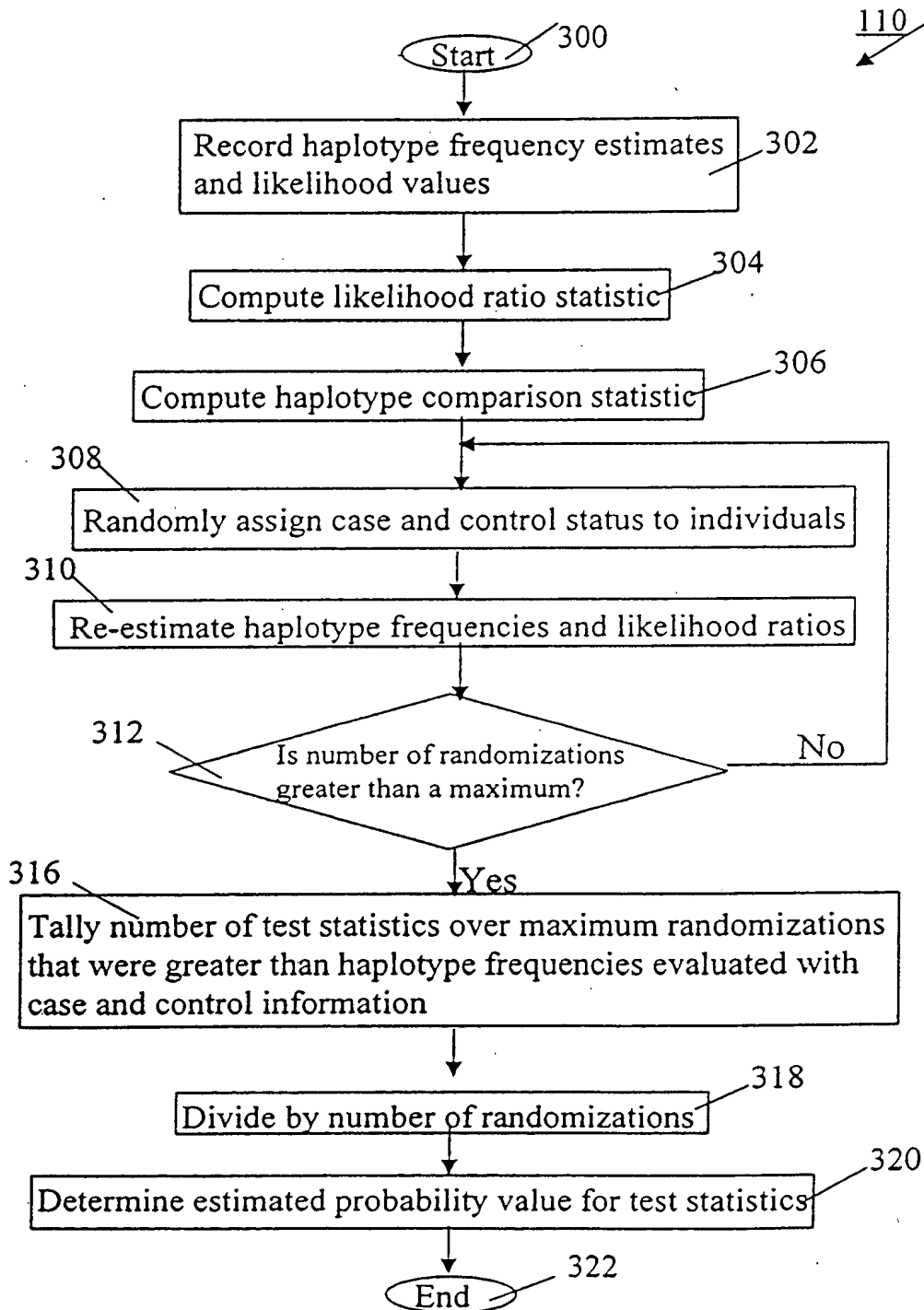


Figure 5

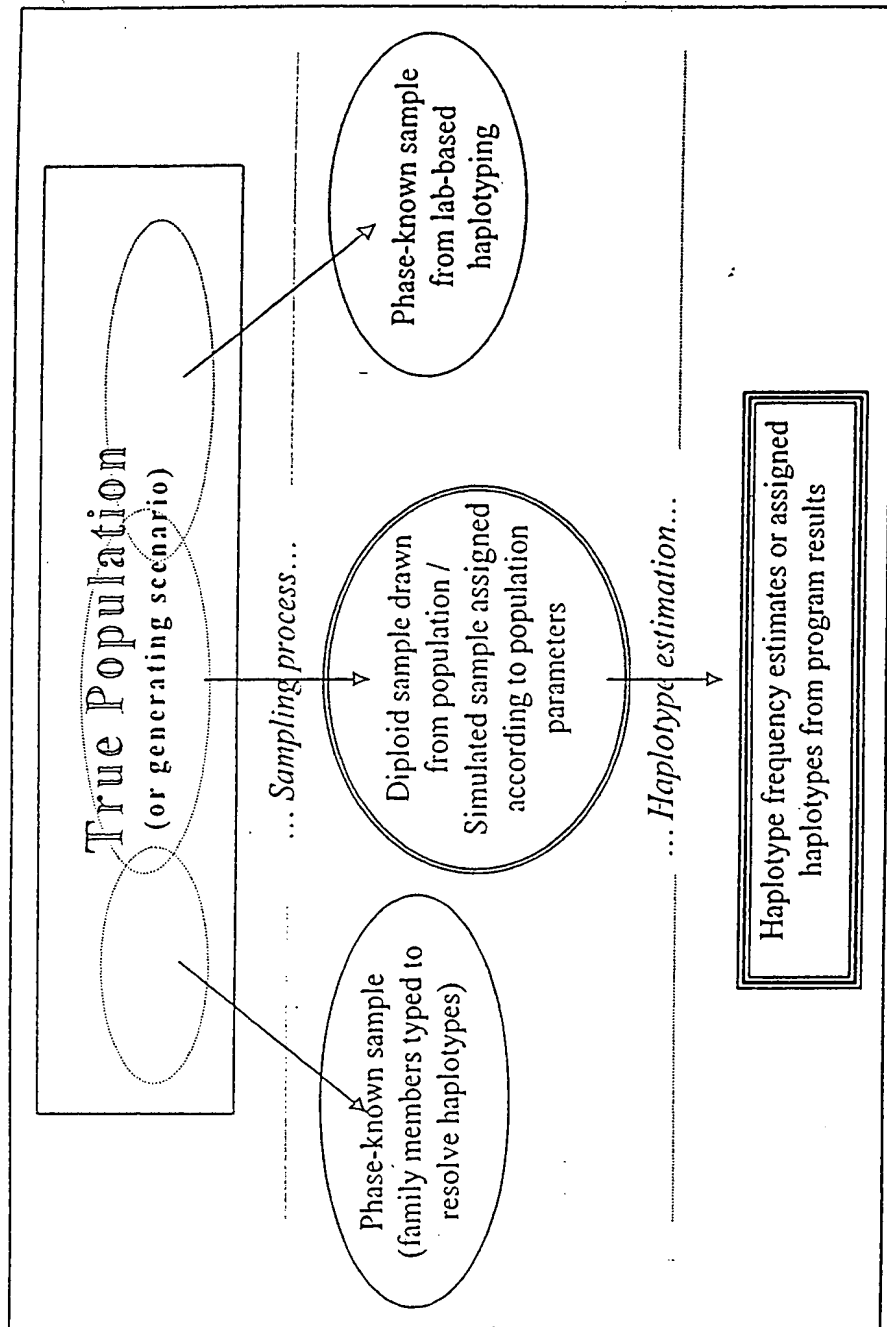


Figure 6

0991660 071601

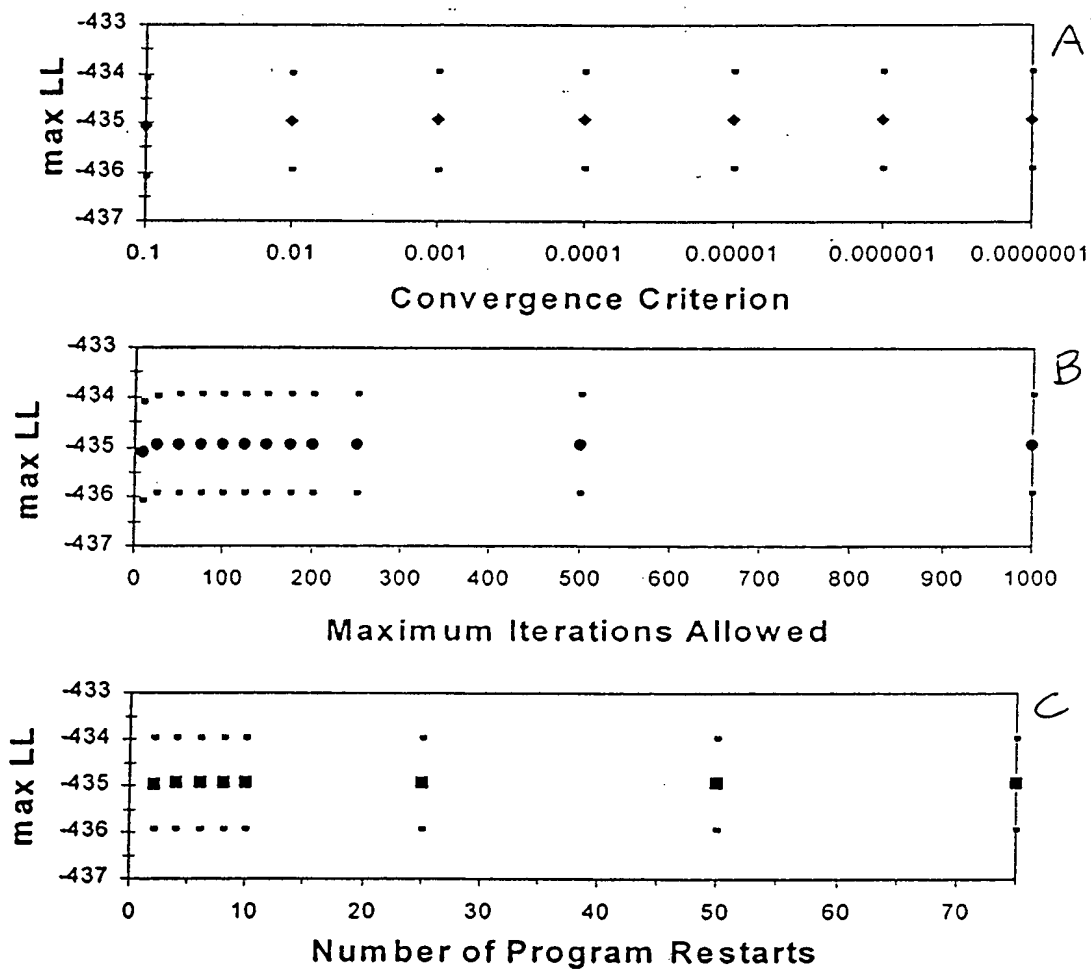


Figure 7

09818260-071601  
T09T20-0928T860

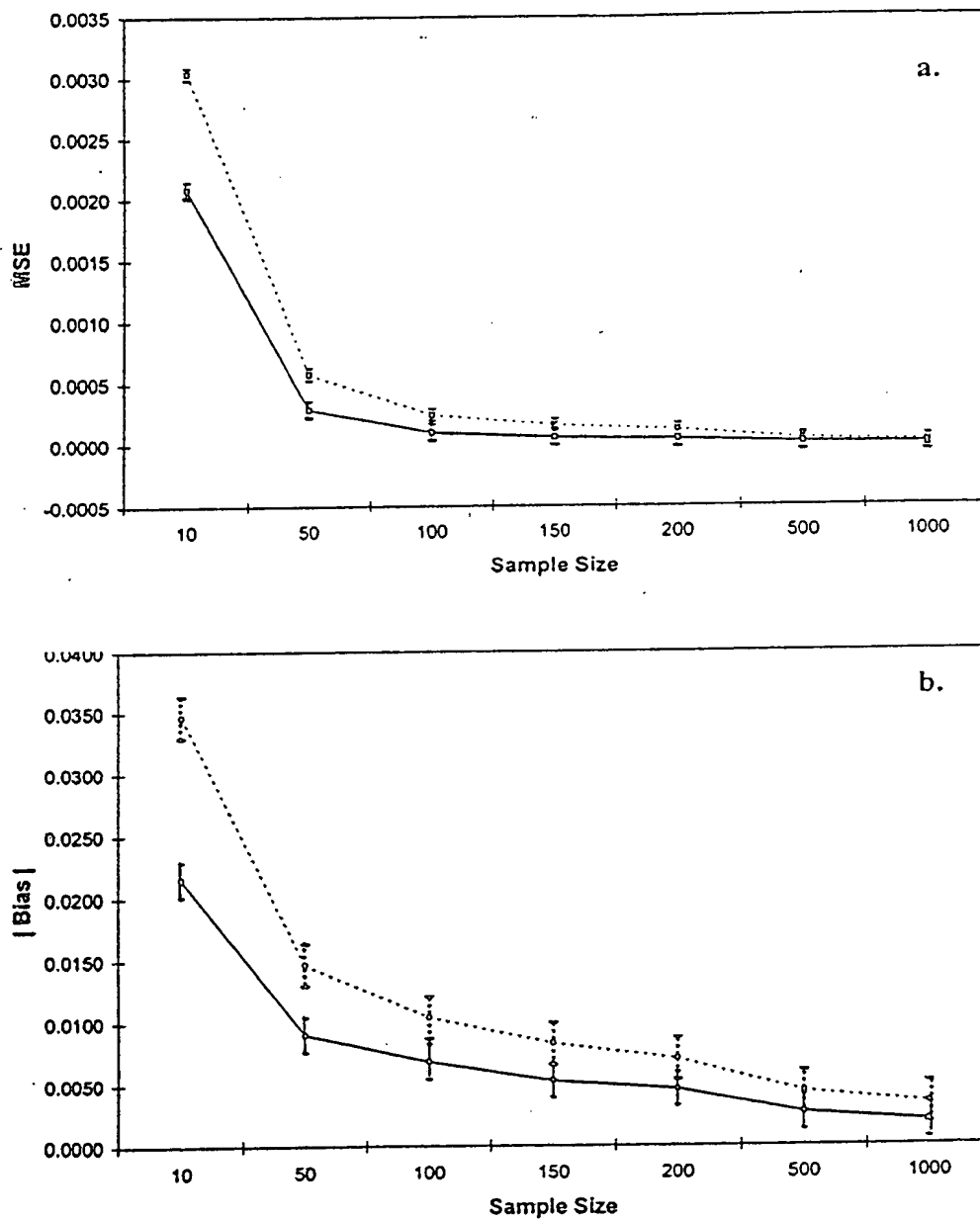


Figure 8



09818260 071601

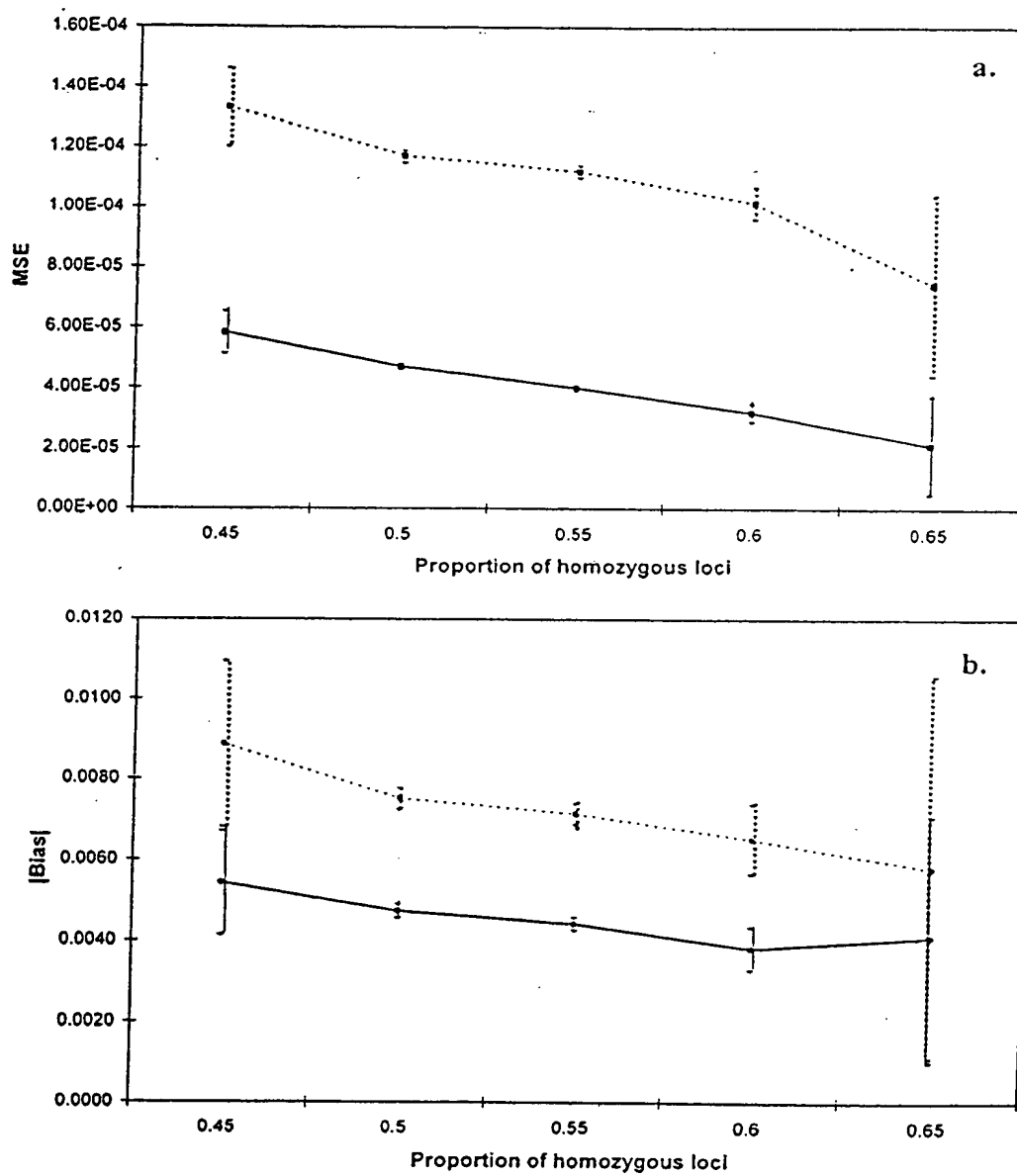


Figure 9

09818260 071604

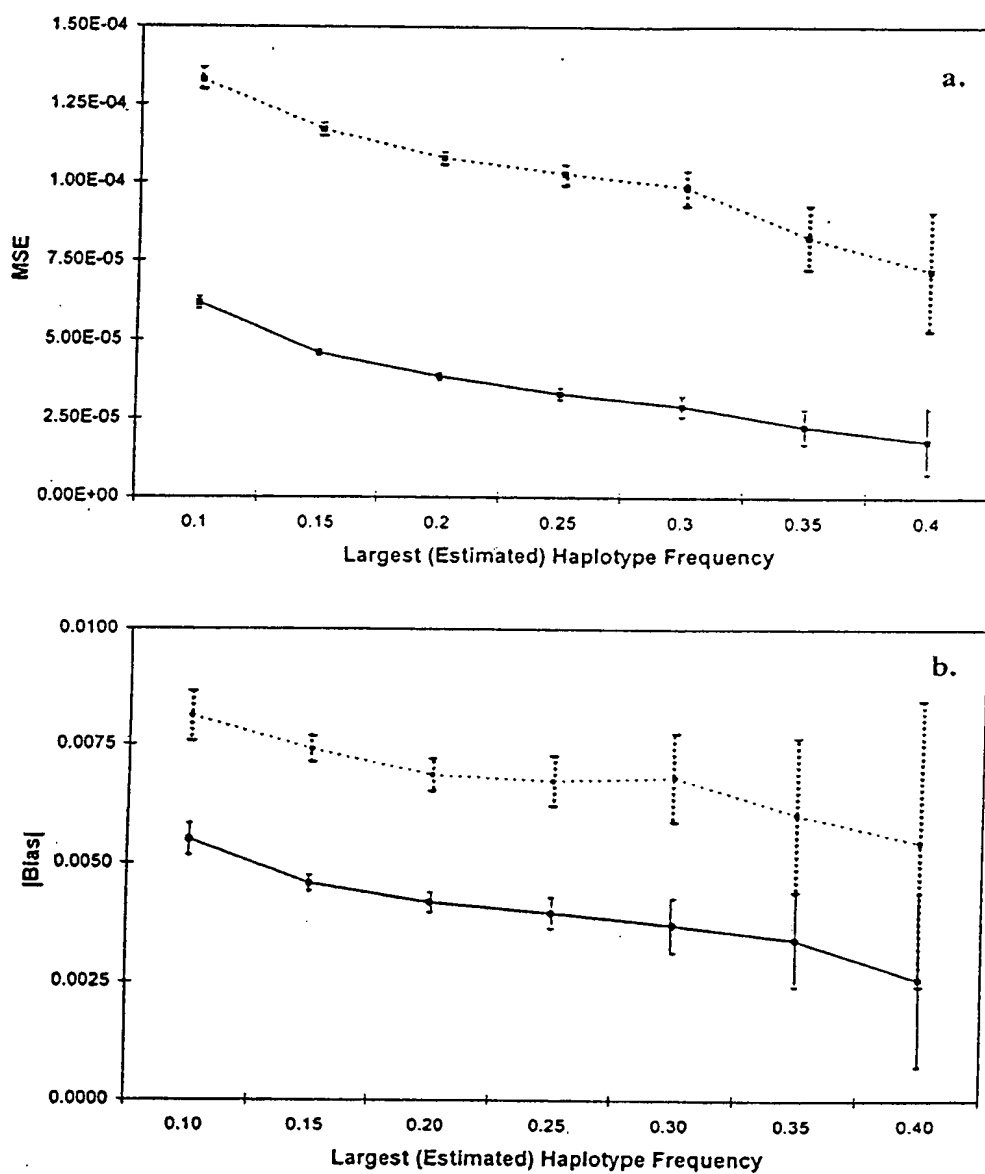


Figure 10

0928T860 071601

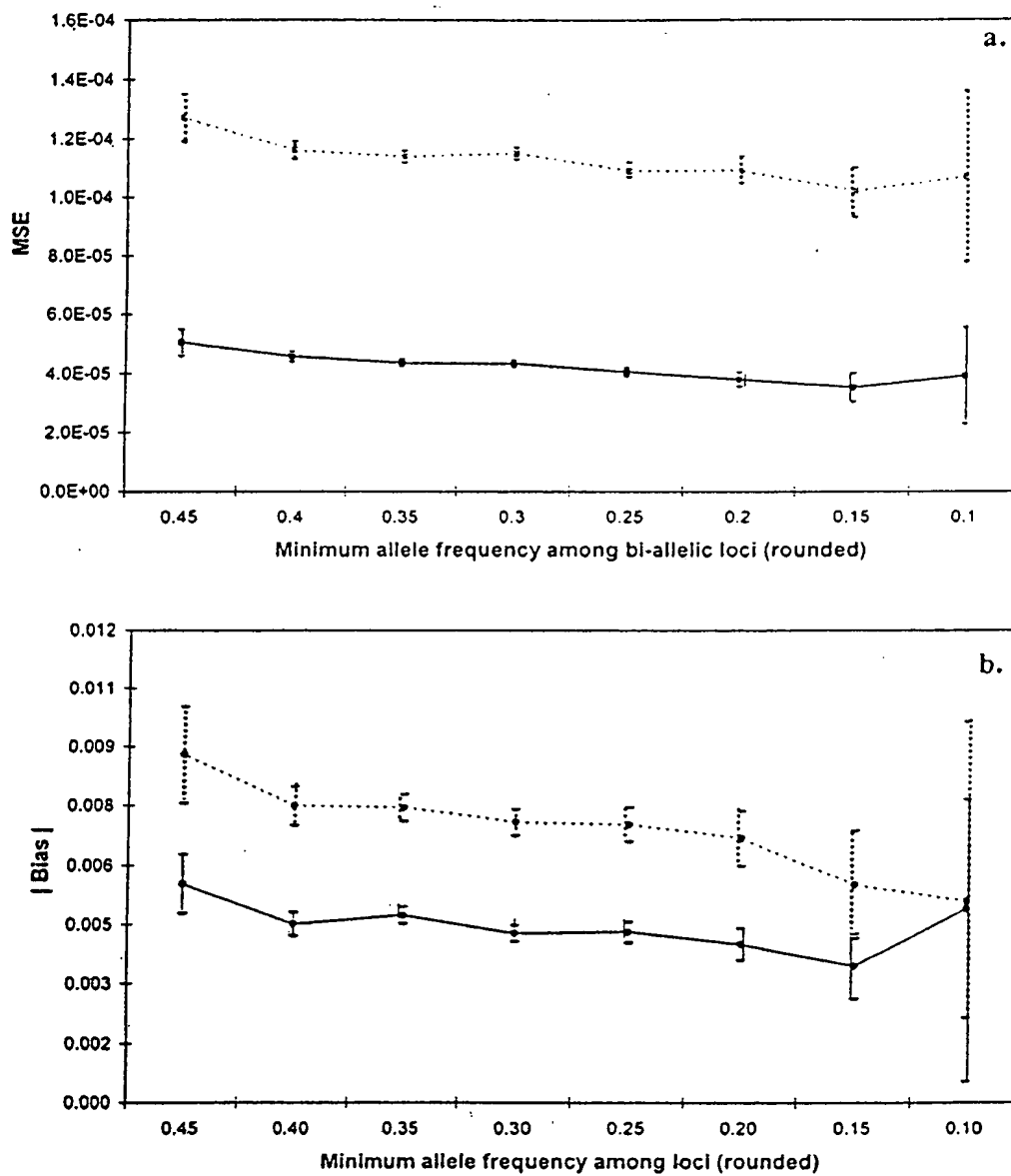


Figure 11

09818260-071601

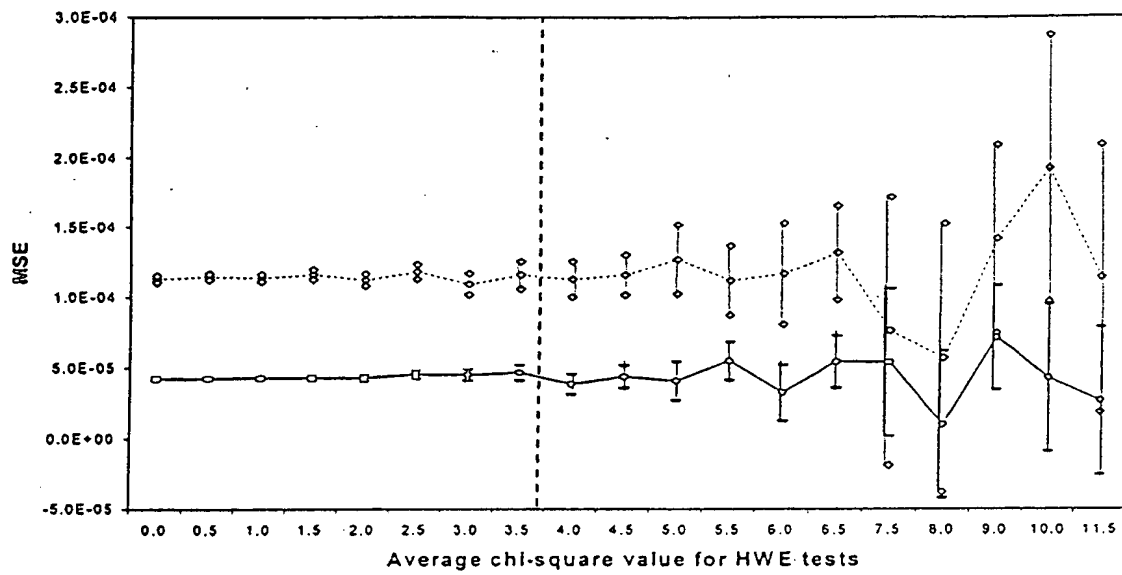


Figure 12

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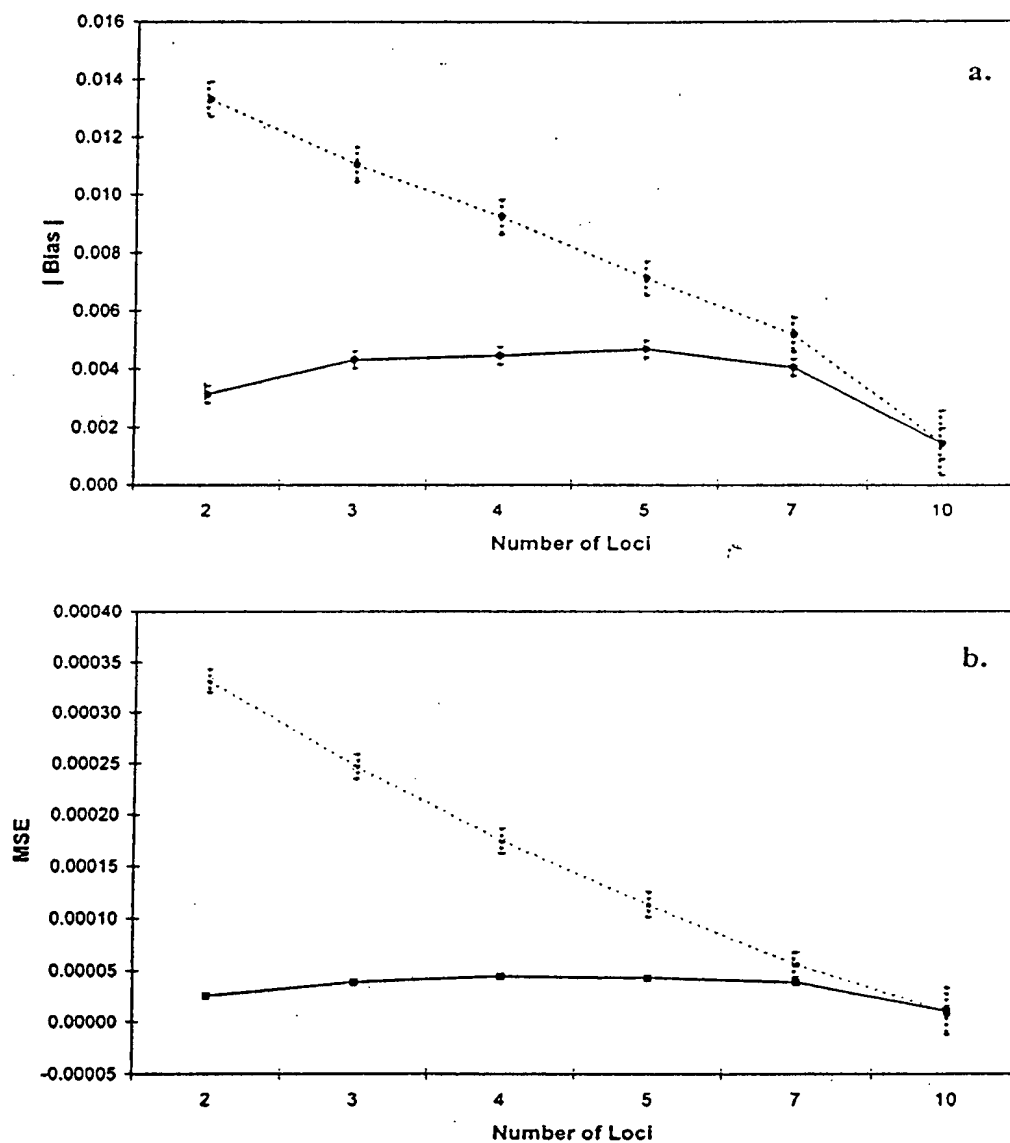


Figure 13

Table. Regression of absolute value of bias between estimated and generating haplotype frequencies on all factors.

Regression including all factors					Single-factor models		
Variable	Estimate	Std. Error	T test	Prob >  T	R <sup>2</sup>	F	Prob>F
2-locus Haplotypes:							
INTERCEP	0.031017	0.00220248	14.083	0.0001	0.0383	395.1818	0.0001
Prop HOMOZ	-0.029256	0.00369778	-7.912	0.0001	0.0468	487.0159	0.0001
Freq largest Hap.	-0.00238	0.00258249	-0.922	0.3568	0.0085	84.85	0.0001
Chi-sq for LD	-3.0429E-05	0.00000383	-7.944	0.0001	0.0004	4.0044	0.0454
H-W status	-0.000878	0.00080228	-1.094	0.274	0.0337	345.6019	0.0001
Avg. Min Allele freq.	0.008471	0.00478999	1.769	0.077			
5-locus haplotypes:							
INTERCEP	0.058585	0.00499106	11.738	0.0001	0.0027	9.7079	0.0018
PropHOMOZ	-0.004128	0.0033604	-1.229	0.2193	0.0085	30.2177	0.0001
Freq largest Hap.	-0.007354	0.00163342	-4.502	0.0001	0.0452	166.6065	0.0001
Avg D' for pairwise LD matrix	0.013172	0.00102619	12.836	0.0001	0.0002	0.8555	0.3551
H-W status	-0.00155	0.00139011	-1.115	0.265	0.0001	0.3553	0.5512
Avg. Min Allele freq.	-8.5172E-05	0.00038764	-0.22	0.8261			

Figure 14

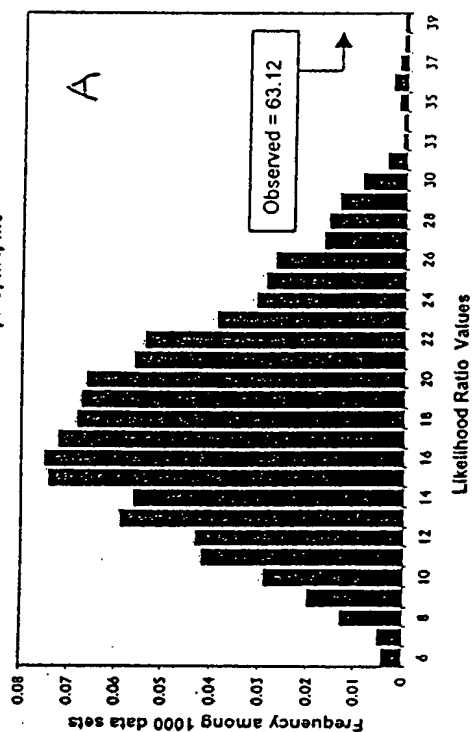
Table. Haplotype Frequency Estimates and Significance Levels of Case-control Comparison from Permutation Tests

Chromosome 19 APOE Gene Region:											
Configuration 1						Configuration 2:					
M1 M2 M3 M4* M5 M6 M7 M8						M1 M2 M3 M4* M5 M6 M7 M8					
* part of 4 allele determination						* part of 4 allele determination					
(APOEεSNP included in haplotypes)						(Loci included flank the APOEε4 SNP)					
Haplotype	Overall	Case	Control	χ <sup>2</sup>	P value*	Haplotype	Overall	Case	Control	χ <sup>2</sup>	P value*
TACA	0.007	0.012	0.000	1.83	0.243	TACA	0.207	0.192	0.220	0.42	0.357
CCCA	0.013	0.022	0.000	3.34	0.025	CACA	0.057	0.050	0.069	0.60	0.357
TTCA	0.009	0.009	0.007	0.04	0.884	TGCA	0.015	0.003	0.034	5.53	0.002
CTCA	0.031	0.049	0.000	7.41	0.014	CGCA	0.166	0.190	0.132	2.10	0.044
TCTA	0.224	0.197	0.258	1.81	0.072	TATA	0.021	0.019	0.023	0.06	0.810
CCTA	0.198	0.189	0.219	0.47	0.285	CATA	0.005	0.009	0.004	0.27	0.776
TTTA	0.000	0.000	0.000	0.00	0.116	TGTA	0.000	0.000	0.000	0.00	0.395
CTTA	0.004	0.006	0.002	0.26	0.837	CGTA	0.008	0.009	0.008	0.02	0.896
TCCG	0.002	0.003	0.000	0.44	0.664	TACG	0.232	0.262	0.195	2.21	0.055
CCCG	0.002	0.004	0.000	0.64	0.562	CACG	0.066	0.049	0.092	2.57	0.061
TTCG	0.088	0.115	0.056	3.56	0.023	TGCG	0.013	0.000	0.032	6.67	0.000
CTCG	0.079	0.110	0.042	5.22	0.023	CGCG	0.176	0.189	0.152	0.83	0.209
TCTG	0.138	0.124	0.159	0.85	0.276	TATG	0.000	0.000	0.000	0.00	0.285
CCTG	0.180	0.135	0.228	5.01	0.008	CATG	0.018	0.014	0.022	0.33	0.606
TTTG	0.017	0.014	0.017	0.04	0.78	TGTG	0.000	0.000	0.000	0.00	0.619
CTTG	0.010	0.010	0.012	0.04	0.846	CGTG	0.016	0.015	0.018	0.05	0.804
Likelihoods:	-1117.2	-668.7	-416.9	63.12**	0.0001		-1149.7	-621.6	-511.5	33.34**	0.0041
Other Haplotype Configurations and Significance Levels											
Chromosome 19 region											
Configuration 3:	M1 M2 M3 M4* M5 M6 M7 M8	Haplotypes contain 4 locus				LRT **		P value*			
Configuration 4:	M1 M2 M3 M4* M5 M6 M7 M8	Haplotypes contain 4 locus				93.66		0.0001			
Configuration 5:	M1 M2 M3 M4* M5 M6 M7 M8	Haplotypes flank 4 locus				57.39		0.0001			
Configuration 6:	M1 M2 M3 M4* M5 M6 M7 M8	Haplotypes do not contain or flank 4 locus				45.64		0.0001			
Chromosome 13 region						13.48		0.2401			
Configuration 7:	M1 M2 M3 M4 M5	Haplotypes in 'control' region				17.29		0.0940			
Configuration 8:	M1 M2 M3 M4 M5					6.49		0.4930			

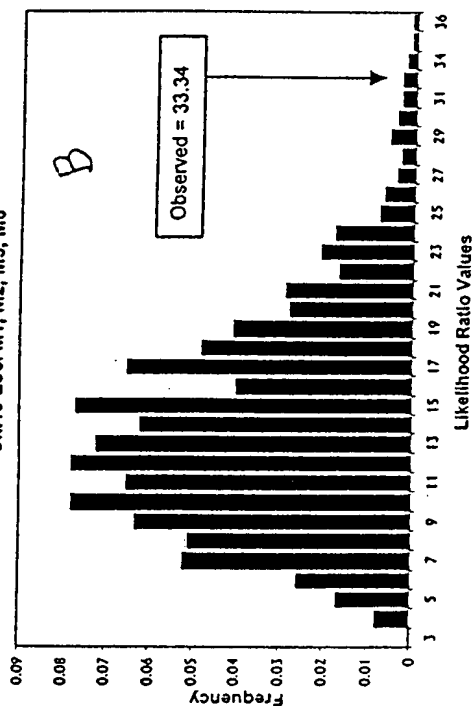
\* P values based on 10000 permutations

\*\* Likelihood ratio test statistic values for omnibus test

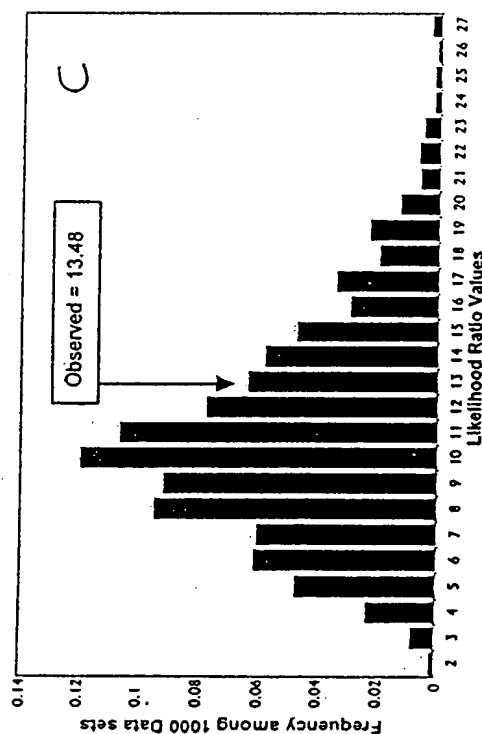
Empirical LR Distribution for 1000 Permutations  
-Ch.19 Loci M1, M3, M4, M6



Empirical LR Distribution from 1000 Permutations  
-Ch.19 Loci M1, M2, M5, M6



Empirical LR Distribution for 1000 Permutations  
-Ch.19 Loci M5, M6, M7, M8



Empirical LR Distribution for 1000 Permutations  
-Ch.13 Loci M2, M3, M4, M5

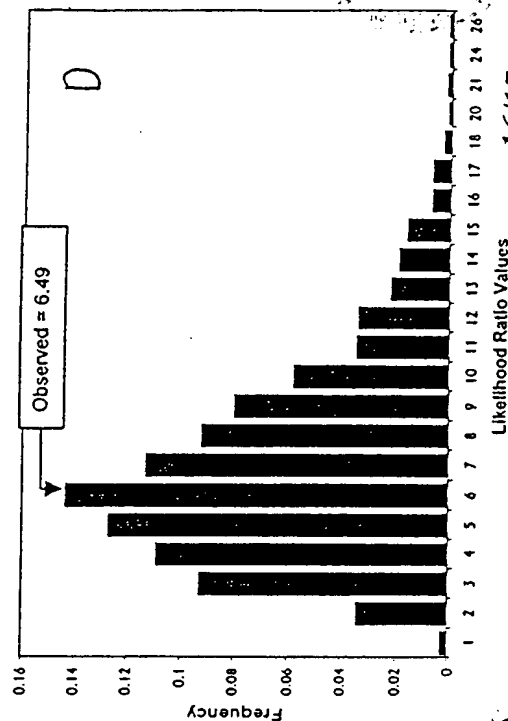


Figure 16



Haplotype Estimation Results:

Hap No.	Haplotype	MLOCUS CEPHGP	SCHORK CEPHGP	PEDIGREE CEPHGP	MLOCUS BRCAtotal	SCHORK BRCAtotal	MLOCUS BRCAcase	SCHORK BRCAcase	MLOCUS BRCAcon	SCHORK BRCAcon
1	11111111	0.29210	0.29208	0.28280	0.21030	0.21687	0.23710	0.24214	0.20470	0.20564
2	11222111	0.20090	0.20085	0.20200	0.02750	0.01921	0.02510	0.02215	0.02700	0.01695
3	12222111	0.17790	0.17793	0.17680	0.14840	0.14497	0.21270	0.20714	0.10000	0.10101
4	12121111	0.11110	0.11111	0.10610	0.21090	0.21302	0.20120	0.18571	0.21360	0.22727
5	21111211	0.09290	0.09293	0.10100	0.16570	0.16256	0.15240	0.16429	0.16630	0.15626
6	11111112	0.08590	0.08586	0.09090	0.01560	0.01479	0.00000	0.00000	0.00000	0.00000
7	12111111	0.01400	0.01399	0.01520	0.00000	0.00000	0.00000	0.00000	0.01000	0.01123
8	11111121	0.02220	0.02222	0.02520	0.00560	0.00636	0.00000	0.00000	0.00000	0.00000
9	21111221	0.00300	0.00303	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
10	11221111	0.00000	0.00000	0.00000	0.18230	0.19231	0.14630	0.15714	0.20910	0.22042
11	11111211	0.00000	0.00000	0.00000	0.01870	0.01686	0.00000	0.00000	0.02630	0.02344
12	21111111	0.00000	0.00000	0.00000	0.00610	0.00608	0.00000	0.00000	0.01120	0.01041
13	21111212	0.00000	0.00000	0.00000	0.00000	0.00000	0.01220	0.00714	0.00000	0.00000
14	12111211	0.00000	0.00000	0.00000	0.00000	0.00000	0.00680	0.00786	0.00000	0.00000
15	12222111	0.00000	0.00000	0.00000	0.00000	0.00000	0.00610	0.00642	0.00000	0.00000
16	11222211	0.00000	0.00000	0.00000	0.00120	0.00150	0.00000	0.00000	0.00480	0.00000
17	11111221	0.00000	0.00000	0.00000	0.00250	0.00252	0.00000	0.00000	0.00420	0.00392
18	21121111	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00330	0.00000
19	21121211	0.00000	0.00000	0.00000	0.00260	0.00000	0.00000	0.00000	0.00130	0.00000
20	11221211	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
21	12121112	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
22	11211211	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
23	21112211	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
24	12212211	0.00000	0.00000	0.00000	0.00260	0.00296	0.00000	0.00000	0.00000	0.00000
25	11112211	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00325
		1.00000	1.00000	1.00000	1.00000	1.00001	0.99990	0.99999	1.00000	1.00000

Figure 17

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